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09/454,027	12/03/1999	DEEPEN SINHA	CASE15-41	3278

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EXAMINER

GRAHAM, ANDREW R

ART UNIT	PAPER NUMBER
2644	8

DATE MAILED: 10/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/454,027

Applicant(s)

SINHA ET AL.

Examiner

Andrew Graham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-46 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-46 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other: ____

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DETAILED ACTION

Drawings

1. The drawings were received on July 28, 2003. These drawings are accepted and approved by the examiner. The objections to the drawings listed in the previous office action have hereby been withdrawn.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

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1. **Claims 1-8, 13-21, 25-32, and 37-45** are rejected under 35 U.S.C. 102(e) as being anticipated by Edler et al (USPN 6360200). Hereafter, "Edler et al" will be simply referred to as "Edler".

Edler discloses a process for reducing the redundancy in the encoding and transmission of multichannel signals. Some of the possible areas of application for the scheme are described as being ISDN, Digital Audio Broadcasting, and computer networks (col. 11, lines 35-42). Regarding **Claim 1**, this reads on an "Apparatus for communicating a signal over a plurality of communication channels". The overall encoding system is based upon a predictor circuit (43) that outputs N prediction signals that are combined with the N input channel signals, wherein the prediction signals are based upon comparisons between different versions of the overall N input channel signals (col. 3, lines 43-65). One particular embodiment that Edler discloses involves a dual-channel stereo version of his encoding and transmission system (col. 9, lines 19-55 and Figure 4). From Figure 1a, it can be specifically seen that device receives, encodes, and transmits the left and right channels of a stereo signal (col. 3, lines 1-3). The input to this system reads on "the signal including at least a first component and a second component" and the encoded respective outputs read on "at least a first representation and a second representation of the signal". From the more detailed illustration of Figure 5, it can be seen that each of the input signals $(x(n), y(n))$ subtractively receive values based on inter-

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channel predictions conducted by the prediction circuit (43) involving each of the input channels. Thus, the first, upper output line corresponding to the input $x(n)$ in Figure 5 includes the input $x(n)$ as well as subtracted predictive values based on $x(n)$ and the other input, $y(n)$. This reads on "the first representation containing first information concerning the first component, and second information concerning at least one coefficient for predicting the second coefficient based on the first information". The other input, $y(n)$, is connected in a similar manner and its corresponding output reads upon "the second representation containing third information concerning at least the second component, and fourth information concerning at least one coefficient for predicting the first component based on the third information". As can be seen in Figure 1a, the encoded signals are sent through a transmission channel to a decoder and this process inherently requires circuitry that reads on "an output device for transmitting the first representation and the second representation through the communication channels".

Regarding **Claim 2**, the two-channel embodiment shown in Figure 1a specifically involves the left and right channels of a stereo audio signal, which reads on "the signal includes a stereo audio signal" (col. 3, lines 1-3).

Regarding **Claim 3**, the two-channel embodiment shown in Figure 1a specifically illustrates the left and right channels of a stereo audio signal being connected as the two input signals to which the prediction signals are added, which reads on "the first component

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includes a left channel signal of the stereo audio signal, and the second component includes a right channel signal thereof" (col. 3, lines 1-3).

Regarding **Claim 4**, it can be seen in Figure 5 that adders (51,54) combine signals from the two input signals, and another set of adders (49) combine these merged signals back with the original input signals and into the overall encoded outputs (col. 5, lines 26-46). This process performed on the first input signal, $x(n)$ reads on "the first information concerns a combination of the first component and the second component".

Regarding **Claim 5**, the predictor circuitry (43), which combines the various stages of the two channel input signal embodiment, uses coefficients which are adaptively changed altered in regards to the instantaneous signal characteristics (col. 8, lines 23-67 and col. 9, lines 1-18). This reads on "the combination of the first component and the second component is adaptively determined".

Regarding **Claim 6**, it can be seen in Figure 5 that adders (51,54) combine signals from the two input signals, and another set of adders (49) combine these merged signals back with the original input signals and into the overall encoded outputs (col. 5, lines 26-46). This process performed on the second input signal, $y(n)$ reads on "the third information concerns a combination of the first component and the second component".

Regarding **Claim 7**, please refer to the like teachings of Claim 5.

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Regarding **Claim 8**, the decoder (41) receives the signal transmitted by the encoder discussed in regards to Claim 1, which inherently reads on "apparatus for recovering a signal" and "a receiver for receiving at least a first representation and a second representation of a signal". The decoder outputs a reconstructed version of the input signals, which inherently requires that at least one of the received signals be used to construct the input signals. This reads on "a processor for selecting use of at least one of the first representation and the second representation to recover the signal".

Regarding **Claim 13**, please refer to the like teachings of Claim 2. Regarding **Claim 14**, please refer to the like teachings of Claim 3. Regarding **Claim 15**, please refer to the like teachings of Claim 4. Regarding **Claim 16**, please refer to the like teachings of Claim 5. Regarding **Claim 17**, please refer to the like teachings of Claim 6. Regarding **Claim 18**, please refer to the like teachings of Claim 5. Regarding **Claim 19**, please refer to the like teachings of Claims 1 and 8. Regarding **Claim 20**, please refer to the like teachings of Claim 2. Regarding **Claim 21**, please refer to the like teachings of Claim 3. Regarding **Claim 25**, please refer to the like teachings of Claim 1. Regarding **Claim 26**, please refer to the like teachings of Claim 2. Regarding **Claim 27**, please refer to the like teachings of Claim 3. Regarding **Claim 28**, please refer to the like teachings of Claim 4. Regarding **Claim 29**, please refer to the like teachings of Claim 5. Regarding **Claim 30**, please refer to the like teachings of Claim 6.

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Regarding **Claim 31**, please refer to the like teachings of Claim 5.
Regarding **Claim 32**, please refer to the like teachings of Claim 8.
Regarding **Claim 37**, please refer to the like teachings of Claim 2.
Regarding **Claim 38**, please refer to the like teachings of Claim 3.
Regarding **Claim 39**, please refer to the like teachings of Claim 4.
Regarding **Claim 40**, please refer to the like teachings of Claim 5.
Regarding **Claim 41**, please refer to the like teachings of Claim 6.
Regarding **Claim 42**, please refer to the like teachings of Claim 5.
Regarding **Claim 43**, please refer to the like teachings of Claims 1 and 8.
Regarding **Claim 44**, please refer to the like teachings of Claim 2.
Regarding **Claim 45**, please refer to the like teachings of Claim 3.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. **Claims 9-12 and 33-36** are rejected under 35 U.S.C. 103(a) as being unpatentable over Edler as applied above, and further in view of Mallinckrodt (USPN 5832379).

As detailed above, Edler discloses a process for reducing the redundancy in the encoding and transmission of multichannel signals.

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The system of Edler includes an encoder (40) and a decoder (41), but specific details concerning the decoder are not discussed, including:

- that the selection of the first and second representations of the original signal is based upon the amount of corruption detected in the signals

Mallinckrodt discloses a system for determining and designating preferred communication connections between a receiver and a plurality of input signal nodes. One of the specific features of the system of Mallinckrodt is the monitoring and compensation for the communication signal based on the bit error rate of the received data (col. 14, lines 28-40). According to Mallinckrodt, static bit error rates can directly be determined unacceptable and variable bit error rates can be compared against an acceptable threshold value (col. 14, lines 35-38). As the signals with the highest signal qualities are inherently the ones preferred, this reads on "at least one of the first representation and second representation is selected based in a measure of corruption of the selected representation".

To one of ordinary skill in the art at the time the invention was made, it would have been obvious to include a signal quality monitoring and compensation system as taught by Mallinckrodt in the decoder component of the system of Edler. The motivation behind such a modification would have been that such a selection scheme would have

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provided an intelligent, structured approach to constructing the best possible representation of an original input audio system.

Regarding **Claim 10**, Figure 7 of Mallinckrodt shows an embodiment of the transceiver of the system that includes forward error encoders (114,156) for each of the two shown sources of audio input (col. 13, lines 1-28). This reads on "the first representation and the second representation are encoded in accordance with a forward error coding technique".

Regarding **Claim 11**, the system of Mallinckrodt uses the bit rate error, as discussed previously in regards to Claim 9, to determine the amount of compensation required for the desired signal quality (col. 14, lines 28-40). This reads on "a count of detection of errors in the selected representation, in accordance with the forward error correction coding technique".

Regarding **Claim 12**, Mallinckrodt also states that the signal quality is based on the noise and interference detected in the signal (col. 14, lines 38-40). The signal quality in regards to interference is compared to a minimal acceptable grade of service (col. 15, lines 62-67 and col. 16, lines 1-2). Mallinckrodt discusses that communication channels that can be used can be integrated satellite and ground nodes (col. 7, lines 3-7). Thus, the signal quality measurement and compensation of Mallinckrodt reads on "the measure being a function of the signal-to-interference ratio afforded by the communication channel from which the selected representation is received".

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Regarding **Claim 33**, please refer to the like teachings of Claim 9. Regarding **Claim 34**, please refer to the like teachings of Claim 10. Regarding **Claim 35**, please refer to the like teachings of Claim 11. Regarding **Claim 36**, please refer to the like teachings of Claim 12.

3. **Claims 22-24 and 46** are rejected under 35 U.S.C. 103(a) as being unpatentable over Edler as applied above, and further in view of applicant's admitted prior art.

As detailed above, Edler discloses a process for reducing the redundancy in the encoding and transmission of multichannel signals. One of the areas of application that Edler discloses is "Digital Audio Broadcasting" (col. 11, lines 35-42).

Yet, Edler does not specify:

- that the communication channels are simultaneously available for transmitting the two representations of the original input signal

In the applicant's disclosure, the applicant discloses that in many prior art, Digital Audio Broadcasting (DAB) systems, "it is possible to transmit audio signals over multiple alternative channels, which are simultaneously available for signal transmission" (page 1, lines 30-32 and page 2, line 1). This reads on "the communication channels are simultaneously available for transmitting the first representation and the second representation".

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To one of ordinary skill in the art at the time the invention was made, it would have been obvious to transmit the encoded signals of Edler over simultaneously available transmission channels as described in the admitted prior art. Such a modification would have been desirable because split, simultaneous transmissions would have enabled concurrent and continuous redundancy and signal reconstruction to take place.

Regarding **Claim 23**, the admitted prior art discloses that terrestrial as well as satellite digital audio broadcast systems have already been proposed (page 1, lines 10-12). This reads on "the communication channels include satellite links".

Regarding **Claim 24**, the admitted prior art, again, discloses that terrestrial as well as satellite digital audio broadcast systems have already been proposed, along with the concept of transmitting multiple signals over multiple channels (page 1, lines 10-12 and page 1, lines 30-32 and page 2, line 1). While, based on these two points of admitted prior art, such a combination would have been inherently possible, the motivation behind adding a third representation would have been the improved error correction provided by the increased redundancy. The motivation for establishing this third signal as a terrestrial link would have been that, though having a more limited range, a terrestrial signal would have been less susceptible to atmospheric disturbances than signals received from and transmitted to satellites.

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Regarding **Claim 46**, please refer to the like teachings of Claim 22.

Response to Arguments

Applicant's arguments, see Amendment A, paper number 6, filed July 24, with respect to the use of the Mansour reference in the 35 U.S.C. 103(a) rejections have been fully considered and are persuasive. The rejections of claims 9-12 and 33-36 over the Edler reference in view of the Mansour reference have been withdrawn.

The Applicant's remaining arguments filed July 24, 2003 predominantly regarding the application of the Edler reference have been fully considered but they are not persuasive.

First, it is noted on page 4, lines 8-13, the applicant summarizes the examiner's rejection and the associations of terminology and elements between the reference and the application. On page 4, line 14, the applicant states, "However, even if one assumes for the purposes of argument that this is the case", which suggests that the applicant believes these associations in some regard to be incorrect. Yet, the applicant does not further substantiate this implication, leaving the reasoning behind such a suggestion undefined. Accordingly, while unable to respond to any specifics of this suggestion, the relative content has been reviewed and has been determined to be correctly presented in the office action as well as appropriate in regards to the cited, relative content. Such

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associations have been maintained and are included in the rejections detailed above.

On page 4, lines 15 and 16, the applicant has stated, "the prediction error signal $\hat{e}_1(n)$ in FIG. 1a is not described by Edler as containing separately-identifiable pieces of information". The examiner respectfully disagrees. It is noted that the limitation of "separately-identifiable pieces" is not included in the claim language, thus rendering moot arguments related to any further limitations implied by the use of such language. The adder (45) in the representative Figure 1 of Edler combines the N-channel prediction output signal and the input signal to form a combinational prediction error signal (col. 3, lines 44-46). In the decoder (41), the same prediction output signal is obtained by a predictor (43) and combined with the input signal received by the decoder (41) to re-establish the original input signal (col. 3, lines 55-67). Depending on the intended scope of the phrase, this ability to obtain the same prediction output signal from the transmitted signal reads on the two sources of information in the transmitted signal being "separately-identifiable".

On page 4, lines 25-26 and page 5, lines 1-2, the applicant has stated, "the prediction error signals $\hat{e}_1(n)$ and $\hat{e}_r(n)$ in FIG. 1a of Edler are not denoted therein as vectors, but are instead apparently one-dimensional signals, each having only a single identifiable information component for a given instance of the sampling time n ". The examiner respectfully disagrees. A signal not written in vector

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notation does not inherently mean that it contains only a single identifiable information component; again, the terminology "identifiable" is not contained or further defined with the included claim language. Multiple bits of information may be extracted from the same data, depending on the involve process or processes of "identification". As detailed above, the fact that the original prediction output signal can be extracted from a combined transmission signal, suggests that both information signals are "separately identifiable".

In view of this response to the arguments regarding the rejections of the independent claims have been maintained, as are listed above.

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Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Graham whose telephone number is (703) 308-6729. The examiner can normally be reached on Monday-Friday (7:30-4:30), excluding alternate Fridays.

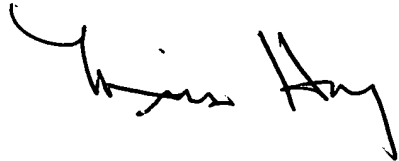
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Isen, can be reached at (703) 305-4386. The fax number for the organization where this application or proceeding is assigned is 703-872-9314 for regular communications, and 703-872-9315 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.



Andrew Graham
Examiner
A.U. 2644



MINSUN OH HARVEY
PRIMARY EXAMINER